

***Triturus vulgaris* (Linnaeus, 1758) at its southern limit: distribution on the Peloponnese, Greece, with range extensions from the Central and South Peloponnese**

Roger BOUR* , Henrik BRINGSØE** & Maurice VANDERHAEGE***

* Laboratoire des Reptiles et Amphibiens, Muséum national d'Histoire naturelle,
25 rue Cuvier, 75005 Paris, France
<bour@mnhn.fr>

** Inrsvej 8, 4600 Køge, Danemark
<nhf@worldonline.dk>

*** 22 rue de la Horgne, 57245 Peltre, France

This note presents a historical account of the discovery of the Greek smooth newt, *Triturus vulgaris graecus* (Wolterstorff, 1905) in the Peloponnese. Recent observations of populations in the vicinity of Tripoli (Arcadia) and Gythion (Laconia), allow to extend its hitherto known range to the Central and Southeastern parts of the peninsula. This range extension includes the southernmost locality known for that species. The wide Peloponnesian range shown on a map in the *Atlas of Amphibians and Reptiles in Europe* (Gasc et al., 1997) is rejected due to lack of documentation.

HISTORICAL RECORD

The first published observation of the smooth newt *Triturus vulgaris* (Linnaeus, 1758) in the Peloponnese appeared very early: the *Expédition en Morée* of 1829-1831 mentioned and depicted it under the name of "*Triton abdomnalis* (Latreille, 1800)" (BIBRON & BORY DE SAINT-VINCENT, 1833: 76; pl. 15, fig. 4-5) "Cette espèce se trouve en Morée [= Peloponnese], et notamment aux environs de Modon [= Modhon, Modoni, presently Methoni]" BEDRIAGA (1881: 287) published this mention, identifying the species as "*Triton palustris* (Linnaeus, 1758)" The second observation, that of a female by Dr. Marán in April 1936 in Kalavryta, was published by ŠTĚPÁNEK (1944: 123), who identified the newt as *Triturus vulgaris graecus* (Wolterstorff, 1905) (type locality: Corfu - Kerkyra). In recent annotated lists of amphibians of the Peloponnese (BRINGSØE, 1986; KHYMAR, 1986a), or in that for the genus *Triturus* in Greece (SOTIROPOULOS et al., 1995), the range of *Triturus vulgaris* on that peninsula appeared to be scattered and limited to the northerly regions with one exception, that of Methoni.

BRINGSØE (1986: 282, 311) gave the following localities, with the references: Kalavryta [= Kalavryta] (ŠTĚPÁNEK, 1944), "approx. 8 km N of Didyma", from eggs, but with reservation

for their identity (ADEMA & IN DEN BOSCH, 1980) and "Kalogria Wood" (personal communication to the author by Chondropoulos from 1985). Besides, Bringsøe called attention to the old record at Methoni. Later, in 1994, the same author (H. B.) visited, together with Jørgensen, the forest of Kalogria (more accurately Strofilia) where they observed many larvae (BRINGSØE, unpublished, JØRGENSEN, 1995). KEYMAR (1986a: 5) mentioned only Kalavryta, Methoni and Didyma, without further details, and the distribution map published by NÖLLERT & NÖLLERT (1992: 203) included these same three localities, showing simultaneously a question mark for the remaining part of the Peloponnese. In our opinion, some doubt could also apply to Methoni, unconfirmed locality for 170 years. However, on the present basis we are unable to judge whether *T. vulgaris* still occurs around Methoni as we are not aware to what extent the area has been investigated, so far we have not seen any reports describing sufficiently detailed surveys which have been carried out at the right time of the year (as to the proper season; see also further down this text).

In a second article, KEYMAR (1986b: 14, 19, 35) stated: "Die subspezies *graeus* kommt auf den vier großen Ionischen Inseln", i.e. Kerkira [= Corfu], Lefkas, Kephalonia [= Kefalonia] and Zakynthos, whereas on the joined map this last island was indicated only with a question mark. On the other hand, the same map seems to show a new point in the northwestern part of the peninsula, to the north of Pyrgos, in the nomos (municipality) of Iliia [= Ileia]. We think that actually Keymar wanted only to indicate the presence of this newt on the nearby Peloponnese in a quite superficial way. CLARK (1989: 9), in a check-list of the herpetofauna of the Argo-Saronic Gulf region, repeated the Didyma record as published by Bringsøe, without adding any new data. Finally, one of us (BRINGSØE, 1994: 354-358) presented a new locality for *Triturus vulgaris graeus*, "5-6 km east of Kertezi, east of Mt. Erymanthos . . . altitude 745 m" [that is, approx. 10 km southwest of Kalavryta], where this *Triturus* taxon is sympatric with *Triturus alpestris* (Laurenti, 1768)¹.

SOTIROPOULOS et al. (1995) compiled an exhaustive study of the geographic distribution of the genus *Triturus* Rafinesque, 1815 in Greece, based on a large bibliography (primary or secondary sources), quoting even... Aristotle! Thus, these authors listed the localities of Didyma (BRINGSØE, 1986), Ileia [Iliia] without any details (KEYMAR, 1986b; we gave our interpretation of this "locality" above), Kalavryta (ŠTĪPANIK, 1944), Kalogria (BRINGSØE, 1986), Kertezi (BRINGSØE, 1994) and Modon (BIBRON & BORY DE SAINT-VINCENT, 1832). Further, they added Patras, with reference to BURISCH & ZONKOV (1941: 223). This last reference originates back from WERNER (1898), however, this author had in fact written (see WERNER, 1899: 16): "Kryoneri, Arkananien, gegenüber Patras". In doing so he clarified the location of Kryoneri (a common toponym in Greece). Thus, only Kryoneri (nomos of Arkanania) is a valid locality in this connection, and Patras has obviously been included by mistake. The localities of Kalavryta, Kalogria and Kertezi are situated in the north-northwest of the Peloponnese, in the nomos of Achaia [= Akhaia] Didyma (northeast, in Argolis) has a degree of uncertainty as the record is entirely based on eggs which were impossible to identify properly. Likewise Methoni (southwest, in Messenia) has not been confirmed since its original mention (see above).

1 About *Triturus alpestris* in Greece: see BREUILL & PARINÉ (1988a,b) and BRINGSØE (1994)

As for the *Atlas of Amphibians and Reptiles in Europe* (GASC et al., 1997: 88), on one hand it depicts the Peloponnese almost completely covered with dots of recent presence (observations after 1970; one dot corresponds to a grid of 50×50 km), and absence being only conspicuous for the eastern "finger" (the Monemvasia area), on the other hand, the islands of Kefallinia and Zakynthos are also covered, unlike Lefkas (fig. 1). However, the sources for such a comforting distribution have not been published. Patrick Haffner, who participated in the elaboration of this *Atlas*, and especially in the collecting of data, has clarified to us

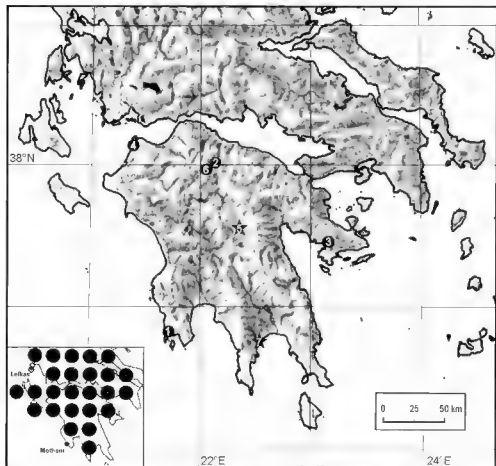


Fig. 1 Southern Greece including the Peloponnese. Localities in the peninsula mentioned in the text where the presence of *Triturus vulgaris* is or was established, in chronological order: (1) Methoni (1829-1831), (2) Kalavryta (1936), (3) Didyma (1980), (4) Kalogria (1985), (5) Kapsia (1987), (6) Kertez, (1994), (7) Gyntion (2001). The stars mark the new localities, dots indicate other localities which have previously been published. The map in the inset shows the range of *Triturus vulgaris* (large dots), according to GASC et al. (1997: 88). Two previously published localities (small diamonds) were omitted in this map: the island of Lefkada (Lefkada), although the presence of the newt was mentioned since 1938 (see SOULIOTIS et al., 1995: 76), and the old locality of Methoni (Modnon). We reject this distribution map (see text).

(personal communication, 15.X.2001) that the set of these "filled grids" was supplied by Sofianidou, but that the original data are retained with her². It is highly regrettable that no document (publications, pictures or voucher specimens for example) authenticates such findings, and we are unaware of the precise basis for selecting these Peloponnesian "localities" for *T. vulgaris*, which, in our opinion, makes the *Atlas* unreliable (on this subject read the detailed criticism by DUBOIS, 1998). Therefore, nothing allows us to accept this new distribution of the smooth newt on the Peloponnese, and we reject it, awaiting possible clarification and documentation. Heinz Grillitsch (personal communication, 16 X 2001) pointed out that the same questions can be also asked, and for the same reasons, about the distribution of *Pelobates syriacus* Boettger, 1889 on this peninsula.

RECENT OBSERVATIONS

Since 1978, one of us (H B) has made regular field excursions on the Peloponnese, with the aim to clarify eco-ethology and chorology in terms of herpetology. On April 23, 1987, he discovered a population of *Triturus vulgaris graecus* (two males and three females observed; fig. 2b) in the vicinity of Tripoli [= Tripolis, Arcadia], more exactly 4 km southeast of Kapsia [- Kapses, Kapsas, Kapsias; i.e. approx. 10 km north of Tripoli; altitude approx. 680 m], but this discovery has so far not been published. The environment consisted of some big ponds, situated in pastures, olive groves and other kinds of arable fields (fig. 2a). Among syntopic species, he noticed *Rana* cf. *ridibunda* Pallas, 1771³, *Hyla arborea* (Linnaeus, 1758), *Pelobates syriacus balcanicus* Karaman, 1928 (a large tadpole) and *Emys orbicularis hellemica* (Valenciennes, 1832) In the very nearby terrestrial habitat, *Testudo hermanni boettgeri* Mojsisovics, 1889, *Podarcis taurica ionica* (Lehrs, 1902) and *Mulpolon monspessulanus insignitus* (Geoffroy, 1829) were recorded as well. The same observer returned to this locality on April 25-26, 1994, but his attempts to find *T. vulgaris* by sweeping a net in the water were in vain. However, a third visit (April 18, 2001) proved successful: after considerable searching one male and two females were found. It is possible that the low number of specimens found in the water was due to the relatively late time of spring regarding each of the three years. This is the first mention of the presence of the smooth newt on the Central Peloponnese. The new locality is situated roughly halfway between Kalavryta and Didyma

During fifteen trips of one to three weeks duration to the southern Peloponnese, spread over ten years, and dedicated primarily to the study of populations of *Testudo weissingeri* Bour, 1995, the two other authors (R. B & M. V) carried out herpetological investigations in a variety of habitats in the northern part of the area called Mani, especially inside a triangle joining Kalamata, Areopoli and Gythion [= Yithio]. During these investigations, more than

2 Sofianidou published in the same period a "check-list" of the tetrapods of Greece (SOFIANIDOU, 1996), where this species is only briefly mentioned in the text, maps have only been arranged for two other Greek species of the genus *Triturus*, *T. ulpestris* (Laurenti, 1768) and *T. karchmi* (Strauch, 1870), whereas *T. carnifex* (Laurenti, 1768) has been entirely omitted from the publication. We can add that in this work, the Peloponnesian distribution map of *Lacerta graeca* Bedraga, 1886 is also too wide and that of *Chalcides ocellatus* (Forsskål, 1775) is by far too extensive.

3 The taxon is probably *Rana kurtmuelleri* Gayda, 1940, older subjective synonym of *Rana balcanica* Schneider & Smissch, 1992 (see DUBOIS & OHLER, 1995, 175)

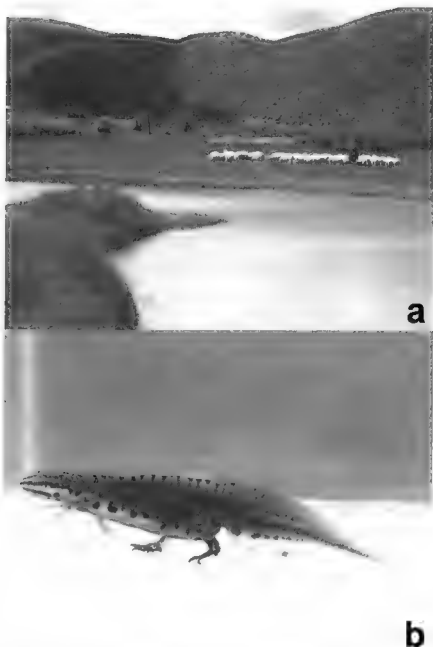


Fig. 2a Habitat of *Triturus vulgaris gracilis* 4 km southeast of Kapsia (north of Tripoli), altitude about 680 m. Taken on 18 April 2001 (photo Henrik Bringsøe)

Fig. 2b Male *Triturus vulgaris gracilis* recorded 4 km southeast of Kapsia (north of Tripoli), 23 April 1987. Notice the tail filament and the unspotted lower margin of the tail fin (photo Henrik Bringsøe)

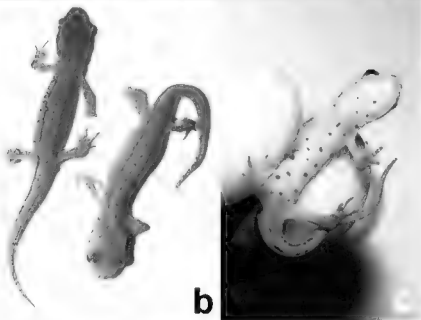


Fig. 3a View of the habitat where the young newts were discovered, 5 km west-southwest of Gythion, the southernmost known locality for *T. vulgaris*. The bed of the Zmnos (invisible) stretches on the left, the pond on the right, both are dried out. Taken on 1st October 2001 (photo Roger Bour).

Fig. 3b-c Young *Triturus vulgaris graecus* found 5 km west-southwest of Gythion 1st October 2001 (photo Roger Bour).

950 individuals of *Testudo weissingeri* were measured and marked, and isolated micropopulations of "dwarf" *Testudo hermanni* Gmelin, 1789 were discovered. Additionally, the sand boa *Eryx jaculus* (Linnaeus, 1758) proved to be much less rare than was previously thought (see BRINGSØE, 1986), due to the observation, under favourable atmospheric conditions (warm and wet weather), of more than fifty specimens (young and adults) within about 20 hectares of light but stony soil, on two olive groves. Encountering tailed amphibians was on the other hand exceptional. The fire salamander *Salmandra salamandra* (Linnaeus, 1758) was observed in or close to mountain streams (torrents) of the Mt Taygetos range. The southernmost localities are the monastery of Agios Samouil (36°53'N, 22°17'E; altitude approx. 750 m and above; larvae and one adult), and the eastern slope of the Mavrovounia, in Agios Panteleimonas (36°54'N, 22°21'E; altitude approx. 1500 m; larvae).

However, during the latest field trip (September 20-October 10, 2001), a second urodele species was found (on October 1), more precisely, four young of *Triturus vulgaris* (Linnaeus, 1758) in their terrestrial phase (total length approx. 35 mm; fig. 3b-c), most probably belonging to the subspecies *graecus* (Wolterstorff, 1905). These newts were gathered, hidden under a slab of about 30 × 50 cm in size, on the sloppy and wooded bank of a dried pond. No more newts were found under other objects like rocks, tree stumps and various garbage. The pond, about 20 × 40 m, extends along the small river named Zminos, flowing like an oued, which runs down from the south of the Taygetos, and which feeds it with water by infiltration. In spring, the water level reaches 100 to 150 cm. This place is partly covered with hydrophilous vegetation and trees, but it is used mainly as a rubbish dump, with many piles of garbage half submerged during the wet season (fig. 3a). Crops extend into the surroundings. The herpetofauna of this semi-aquatic habitat has so far been observed to also consist of *Rana* cf. *rubivanda* Pallas, 1771 (see note above), *Hyla arborea* (Linnaeus, 1758), *Emys orbicularis hellenica* (Valenciennes, 1832), *Mauremys rivulata* (Valenciennes, 1833) and *Natrix natrix persa* (Pallas, 1814). In the surrounding terrestrial habitat, *Eryx jaculus turcicus* (Olivier, 1801) and *Testudo hermanni* subsp. were also registered. The exact place of these observations is situated between Nea Marathea and Agios Vasilios (36°45'N, 22°31'E; altitude approx. 10 m), roughly 5 km west-southwest of Gythion (Lacoma). Unfortunately we have to add that this place, as many others, is used as a dump for garbage, and that pumps feeding irrigation networks are more and more wide-spread along the banks of the Zminos: the future of this habitat and its fauna is therefore very questionable⁴.

DISCUSSION AND CONCLUSION

With these new records, in total seven localities inhabited by *T. vulgaris* are known from the Peloponnese (fig. 1): (1) Methoni (Messenia), (2) Kalavryu (Achaea), (3) Didyma (Argolis), (4) Kalogria (Achaea), (5) Kapsta (Arcadia), (6) Kertzei (Achaea), and (7) Gythion (Laconia). Five of them were discovered during the last twenty years. Results are encourag-

4 More generally, the problem of water supply is going to arise more and more in the Peloponnese, mostly in connection with the increasing development of these irrigation networks and catchments made into rivers, mostly temporary, or straight into springs.

ing, because it is a priori surprising to notice southern range extensions of an animal species which depends on aquatic environments, in a region where aridity seems to progress at an alarming rate, simply due to major destructions of the environment throughout Greece.

Several explanations, in part complementary, may be put forward to explain these discoveries. It is likely that researchers as well as the searches are today more numerous and more accurate. It should be kept in mind that *T. vulgaris* leaves its breeding pond relatively quickly, after egg-laying, to adopt a fully terrestrial life. The metamorphosed young return to the water only after several years, in spite of the drying of ponds, puddles or ditches during summer, this species still manages to survive such hostile environments. We may also postulate that on the Peloponnese – i.e. the very south of its range – *T. vulgaris* most probably breeds earlier in the year and thus leaves the water earlier than in the north, but that will need to be properly documented. The phenology of *T. vulgaris* in another southern range, the Izmir region of West Turkey, has already been established: adults are aquatic from around December through April (SCHMIDTLER & SCHMIDTLER, 1967, contrary to ÖZETI, 1964, who extends the aquatic phase up to June). We think it probable that the South Greek populations of *T. vulgaris* exhibit a similar tempo of activity. That may explain why it was so difficult to record the species in the water of the Kapsia locality at the end of April. More surprising is the fact that *T. vulgaris* and *T. alpestris* were found to be abundant in the ditches at the Kertezi locality on 17-18 May (BRINGSØE, 1994). For comparison, in Central Europe adult *T. vulgaris* usually leave the water in about late June to early July (NOLLER & NOLLER, 1992). Another possible explanation for this apparent sporadic range involves a positive human action, i.e. a wilful introduction, or as stowaway. For instance, the last found locality is not far from a sports ground and is used as a garbage: this place is frequently visited. Finally, nocturnal activity of the newts on the ground does not favour observation of individuals in their terrestrial phases. Early April and earlier may be best to register *T. vulgaris*.

Although *T. vulgaris* may be more common on the Peloponnese than what is usually believed, we expect that it exists in rather sparse and isolated populations. Generally, the Peloponnese is very dry and seems to have relatively few and scattered suitable freshwater habitats. For *T. vulgaris* the landscapes of the Peloponnese will appear fragmented and it may be difficult to colonise and re-colonise new habitats. Other amphibians like *Hyla arborea*, *Bufo bufo* (Linnaeus, 1758), *B. viridis* Laurenti, 1768 and *Rana ridibunda* s. l. are known to be able to migrate over longer distances and are more mobile on land than *T. vulgaris* (see for instance the individual species accounts in GÜNTHER, 1996). These four anuran species are common and widely distributed on the Peloponnese and often breed in man-made habitats of standing freshwater (BRINGSØE, 1986).

RÉSUMÉ

Les découvertes successives du Triton ponctué grec, *Triturus vulgaris graecus* (Wolterstorff, 1905), dans le Péloponnèse, sont rappelées dans leur chronologie. Cette note précise la repartition actuellement connue du Triton ponctué pour l'ensemble de la presqu'île et révèle la présence de cette espèce dans le centre (environs de Tripoli, Arcadie) et le sud-est (environs de Gythion, Laconie, localité la plus méridionale connue). La distribution

présentée dans l'*Atlas of Amphibians and Reptiles in Europe* (GASC et al., 1997), couvrant la majeure partie de la péninsule, est rejetée car elle n'est pas étayée par des spécimens ou des données précises

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Corresponding editor: Alain DUBOIS